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ABSTRACT

This study ascertained the relationship between language maturity and mode of aggressive expression. More than 100 second and third grade children from Tallahasee, Florida schools took an apperceptive aggressive test to determine aggressive modality and then completed a portion of the Paradigmatic-Syntagmatic Language List to assess language maturity. This study was designed to test the following hypotheses: (1) there is a significant negative relationship between language maturity and physical mode of aggression when sex and social class are held constant, and (2) there is a significant positive relationship between language maturity and verbal mode of aggression when sex and social class are held constant. Results indicated that physically aggressive children selected the physical mode regardless of sex or social class, refuting previous research in the area of aggressive behavior. The best predictor for physical aggressive expression appeared to be language immaturity. Additionally, the results indicated that verbal aggression may be the result of language maturity although its predictability was not as strong as physical aggression. In the case of verbal aggressive expression, sex was the single best predictor. (DST)

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Paradigmatic Speech and its Relation to Childhood Behavior

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Running Head: Paradigmatic Speech

ABSTRACT

One hundred and eight second and third grade children were given the NEAT apperceptive aggressive test to determine aggressive modality and then completed a portion of the Paradigmatic-Syntagmatic Language List to assess language maturity.

The results indicated that physically aggressive children selected the physical mode regardless of sex or social class, refuting a great deal of research in the area of aggressive behavior. The best predictor for physical aggressive expression appears to be language immaturity.

Additionally, the results indicated that verbal aggression may be the result of language maturity although its predictability is not as strong as physical aggression. In the case of verbal aggressive expression, sex was the single best predictor.

Paradigmatic Speech and the Relationship to Aggressive Behavior

Aggressive behavior in school-aged children can manifest itself in a variety of manners. Two easily identified expressions of aggression are the physical and verbal modes. While it is understood that many variables, both social and psychological, could be contributing to aggressive expression, a great deal of this behavior could be related to level of language maturity which a child possesses (Montare, Boone, 1973).

The Language-Aggression hypothesis is based upon the theory that language development is necessary for the development of self control to occur. There is evidence to support the theory that as a child develops language, he/she concurrently begins to develop self regulation of behavior (Vygotsky, 1962; Luria, 1961; Bruner, 1964).

Language, Thought and Behavior Control

As children grow, they first learn the speech patterns of those in their immediate environment (Vygotsky, 1962). With maturation comes the development of egocentric speech patterns. It is at this stage of development that children begin to direct their own behavior. This appears to be the period when language has regulatory capabilities.

Research evidence suggests that a child's language changes from immature (syntagmatic) to a more mature (paradigmatic) pattern at approximately the same chronological period as the shift from the physical to the verbal mode of aggression (Brown and Berko, 1960). Syntagmatic speech is defined as language that is noncongruent or associative in nature (e.g. meaning depends upon sequence rather than word class). Paradigmatic speech is defined as

language which has logical congruence in semantic organization; words are from the same form or class, or they bear the relationship subordinate to superordinate, or they are synonymous or antonymous.

Young children tend to look toward adults for support when confronted with an aggressive situation, but as they grow older they deal with aggression in a more active manner. Physical aggression in children appears to reach a peak at about the age of nine, at which time verbal aggression tends to become more dominant (Shantz, Voydanoff, 1973).

As language becomes more paradigmatic in nature, it acts as a mediator in a stimulus response situation. The more mature a child, the greater mediation in an aggressive environment. Children begin to make the shift from syntagmatic to paradigmatic speech at about the age of nine (Brown and Berko, 1960), corresponding with the shift of aggressive response from the physical mode to the more verbal response.

Could it be that aggressive behavior may not be related to socioeconomic status (SES) or sex but be dependent upon language maturity? In other words, the level of language maturity, or mediation capability, influences aggressive response regardless of SES or sex.

Traditionally, lower SES children, specifically males, have scored higher on instruments which measure aggressive inclination (Feshbeck, 1969). At the same time, these children have been labeled, as a group, to be language deficient (Bereiter and Englemann, 1966).

This study was designed to test these hypotheses:

1) There is a significant negative relationship between language maturity and physical mode of aggression when sex and social class are held constant.

2) There is a significant positive relationship between language maturity and verbal mode of aggression when sex and social class are held constant.

This study ascertained the relationship between language maturity and mode of aggressive expression. The expected relationship was: the more mature language possessed by an individual, the lower the frequency of physical outbursts of aggression. Similarly, the less mature language possessed by an individual, the higher the frequency of a physical outburst of aggression.

Method

Sample

One hundred and eight (108) second and third grade students from Tallahassee, Florida's schools served as subjects. The purpose for selecting this age group was to incorporate age levels in which both mode of aggression and language maturity seem to be in transition; that is, 7-9.

Subjects were selected along Florida's statistical report (1978) for race so that 18 percent of the sample population was Black and 82 percent non-Black. Subjects were matched for sex so that there was an equal number of boys and girls at both race and level of social class. Subjects were also matched for SES along the same levels as listed in the Florida Statistical Abstract (Thompson, 1978). Family of four income information was used to categorize SES levels.

Procedure

To measure paradigmatic or syntagmatic responses, a thirty-word association test was given by a trained experimenter, allowing the subject five (5) seconds per stimulus word in order to respond. Subjects were tested individually in a private location. Instructions were given as to the game we were about to play. A discussion ensued as to how to play the word association game in which the experimenter was to say a word followed by the first word that came to mind by the subject. Two practice words were given to each subject in order to assure that the instructions were understood. The same experimenter next interviewed each subject in a one-to-one setting to ascertain whether the student was

physical or verbal in his/her aggressive response by motive. Subjects were given directions as to how to complete the Nancy and Ernie Aggression Test (NEAT). The examinee read each aggressive situation to the subject followed by three choices: a physical, a verbal or an avoidance choice to be selected by the subject.

Measurement of Language Maturity. Subjects were given the P/S Language List (Entewisle, 1966) to assess level of language maturity. This particular list consists of thirty stimulus words given individually to each subject in a private location.

The P/S Language List was chosen as a language indicator because of its adaptability to different racial and social groups. The P/S Language List measured both paradigmatic and syntagmatic responses, not only in Standard English but also in the low SES child's dialect, if one existed. For the purpose of illustration, the P/S Language List is included below.

1. Black	_____	16. Add	_____
2. Carry	_____	17. Listen	_____
3. Obey	_____	18. Never	_____
4. Sour	_____	19. Bird	_____
5. Quiet	_____	20. War	_____
6. Give	_____	21. Bright	_____
7. Rough	_____	22. He	_____
8. Table	_____	23. Little	_____
9. Slow	_____	24. Over	_____
10. Cold	_____	25. Dark	_____
11. In	_____	26. City	_____
12. Father	_____	27. Soft	_____
13. Run	_____	28. Tell	_____
14. Mix	_____	29. Between	_____
15. Begin	_____	30. Up	_____

Measurement of Aggressive Behavior. After extensive review, an appropriate instrument for measurement of aggressive tendency could not be found. Consequently, the Nancy-Ernie-Aggression Test (NEAT) was developed. This instrument measures in an apperceptive manner whether the child is predominantly physical or verbal in his response to 24 stimulus pictures coded for sex, in that the

object of aggression for male subjects is Ernie and for female subjects, Nancy. Split-half reliability estimates were .90 for physical aggression and .78 for verbal aggression.

Concurrent validity, using the Spearman rho correlation, was established as .61 ($p<.01$) for physical aggression and .38 ($p<.05$) for verbal aggression when teacher ratings and NEAT results were correlated. For illustrative purpose, an example from the NEAT is included below.

1. V,S,fp

All the children were at school before it was time to go inside. Everyone had picked an area on the playground that they especially liked. Ernie was watching the other boys slide down the slide, but was not sure if he wanted to try himself. While he was thinking about whether to slide down or not, one of the boys named Greg ran by and called over to Ernie,

1. "You big sissy!"

What will Ernie do?

1. Hit the other boy. (P-2)
2. Tell the teacher, who is on the playground. (V-1)
3. Run away.

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Design

To test each hypothesis, the data were analyzed in the following manner: For Hypothesis One, independent variables of sex, social class and language maturity were correlated with physical aggression scores using a multiple regression procedure. Following this multiple regression, a similar comparison was done for verbal aggression, considering sex, SES and language maturity as independent variables. By examining pair-wise correlations and proportion of variance associated with sex and SES, the relative importance of these particular variables was determined.

There is evidence in the literature to suggest that sex and social class are prominent when explaining a child's aggressive preference. Due to previous research dealing with aggression, in which sex and social class are considered, these two variables were entered first, forcing the burden of proof on language maturity, which was entered last. Order of entry of variables in multiple linear regression is extremely important in that R and R^2 for initial entries contain overlap from each additional variable relating to total explained variance (Kerlinger, Pedhuzat: 1973). By entering the language maturity variable last, as previously explained, the R^2 change attributed to language maturity includes variance that is exclusively attributable to that variable when it is in conjunction with the other two.

Results

The independent variables for the multiple regression were sex, social class, and language maturity plus all interactions of these variables. The dependent variable was mode of aggressive expression, consisting of the verbal and physical expression of this behavior.

A multiple linear regression model was used to analyze the data. The two regression equations for this particular study are:

$$Y(\text{Physag}) = \beta_0 + \beta_1 \text{SEX} + \beta_2 \text{SES}_1 + \beta_3 \text{SES}_2 + \beta_4 \text{LANG} + \text{Error}$$

$$Y(\text{Verbag}) = \beta_0 + \beta_1 \text{SEX} + \beta_2 \text{SES}_1 + \beta_3 \text{SES}_2 + \beta_4 \text{LANG} + \text{Error}$$

The need for two regression equations is due to the two models for aggression, one considering sex, SES and language maturity plus interaction for physical aggression and one model considering sex, SES and language maturity for verbal aggression. Due to the three levels of social class for this study, dummy variables were used to code SES.

Scatter plots of the data obtained to test all hypotheses indicated that the assumptions of Multiple Linear Regression were not violated. The data appeared to be linear in nature.

A regression analysis was done to test the statistical significance of the interaction of variables in both Models One and Two. The resulting data indicated that these interactions failed to reach statistical significance ($p > .05$), consequently leading to no further analysis of interaction terms in this study.

Model One - Physical Aggression

Table 1 summarizes results of the regression analysis of variables for Model One.

Insert Table 1 about here.

As can be seen in Table 1, the overall F ratio for language variable is statistically significant ($p < .001$). The proportion of variance accounted for by the model is 24% ($R^2 = .24$). In view of the overall F ratio, these results are accepted as being statistically dependable. Because of this,

a continued analysis of the data with regard to Hypothesis One appeared reasonable.

Physical Aggression

Hypothesis One dealt with Model One for physical aggression and predicted that with low language maturity there would be a greater probability that a child would use the physical mode of aggressive expression when given a choice between the verbal and physical reactive modes.

Insert Table 2 about here.

In this study, mature language was measured by the score on a test of paradigmatic speech. These scores were then regressed on the physical aggression score. As can be seen in Tables 1 and 2, there is a correlation (-.45) between mature speech and physical aggression; this correlation accounts for 20% of the total variance explained. While the model explained 24% of the variance regarding physical aggression, language maturity was responsible for the majority, indicating its relative importance. An F ratio of 29.90 (1,103 df) further suggests that this relationship did not occur as a result of chance factors.

Controlling for the Sex of the Subject with Physical Aggression

Sex, previously reported in the literature as an important variable when explaining aggressive expression, does not reach statistical significance ($p=.295$) in Model One. Thus, this variable has little power for explaining preference for physical aggression. Because the variable sex was entered into the regression model first, the multiple correlation presented above is also the simple correlation attributed to sex. The simple correlation between sex and physical aggression is .10, explaining

1% of the total explained variance. With such a low correlation and small amount of variance explained, for this sample sex possesses little utility in explaining differences in physical aggression.

Controlling for the Social Class of the Subject with Physical Aggression

There is also evidence in the literature to suggest that social class has a bearing on modal preference of aggressive expression. The F ratio (.30; 2,103 df) attributed to SES for Model One did not reach statistical significance (p=.579). This finding suggests that social class is of little value when attempting to explain physical aggression. Multiple R^2 change attributed to SES was .002, indicating that there is little, or no, contribution from the variable as less than 1% of the variability for Model One is explained by SES.

Physical Aggression

The expectation associated with Hypothesis One is that language immature children tend to use physical aggression as a means for the expression of aggressive feelings when sex and social class are considered. The data summarized in Table 1 indicate that when attempting to explain physical aggression, language maturity has more explanatory power than sex or social class. In this case, an inverse relationship was found between language maturity and physical aggression.

Model Two - Verbal Aggression

Table 3 summarizes the data from the regression analysis for verbal aggression when sex and social class and language maturity are the predictors.

Insert Table 3 about here.

Evidence derived from this table indicates that the overall F ratio is statistically significant (p=.02). Although the proportion of variance explained by the model for verbal aggression is low (R^2=.10), it is interpreted as having moderate theoretical importance due to the exploratory nature of this study (Cohen, 1977, p. 80).

In view of the overall F ratio for the model, the probability of chance as an explanation for the results is minimal. Because of this conclusion, a continued analysis of the data with regard to Hypothesis Two appears to be appropriate.

Verbal Aggression

The second hypothesis predicted that children with high language maturity would react to an aggressive stimulus condition by opting for the verbal reactive mode in the majority of cases.

Insert Table 4 about here.

Paradigmatic speech was used as a language maturity indicator. Number of paradigmatic responses was correlated with verbal aggression (Model Two). Mature language and verbal aggression are correlated at .16, accounting for 2.6% of the variance regarding verbal aggression. Although the F ratio (1,103 df) attributed to the simple correlation between language maturity and verbal aggression reached statistical significance (p=.05), proportion of variance accounted for by this simple correlation is quite low (r^2=.026).

Controlling for the Sex of the Subject with Verbal Aggression

The simple correlation attributed to sex and verbal aggression is -.256 which accounted for 6.6% of variance, again a quite low amount of variance explained. For this sample, males were coded as +1 for

statistical analysis and females as -1. Due to this coding scheme, the negative correlation between sex and verbal aggression indicates that females more often chose the verbal mode of aggression than did males. Sex, previously reported in the literature as an important variable when explaining a subject's choice of aggressive preference, reaches statistical significance in Model Two and explains a higher percentage of variance than language maturity.

Controlling for the Social Class of the Subject with Verbal Aggression

There is evidence in the literature to indicate a relationship between social class and aggressive expression. For this sample of subjects, however, the F ratio attributed to SES for Model Two (.49; 2,103 df) does not reach statistical significance (p=.485). This suggests that the observed result is due to a chance factor. The overall F ratio for the model, when considering sex and social class, decreased from 7.48, which was statistically significant (p=.007) for sex only, to 2.62, which was not statistically significant (p=.054) when considering sex and social class together.

Proportion of variance in aggressive expression explained by SES was (R^2=.004) less than 1% of the total variability. This finding is surprising and would indicate that there is little value associated with SES as an explainer of verbal aggressive expression.

Verbal Aggression Summary

The data summarized in Table 3 indicate that when attempting to explain verbal aggression, language maturity does not account for as much variance as does sex or social class of the individual. The expectation associated with Hypothesis Two is that language mature children tend to opt for verbal expression of aggression when sex and social class are held constant. The data associated with this particular sample regarding Hypothesis Two do not support this prediction.

Conclusions

The language-aggression hypothesis appears to hold true for low language maturity children in that their preferred aggressive behavior selection is the physical system, whereas the relationship between verbal aggression and mature speech is not as strong. Boys and girls who were identified as language immature, regardless of socio-economic strata, tended to select the physical-expressive mode of aggression. Language maturity was not necessarily an accurate variable for identifying and explaining verbal aggression as a response choice of children. Girls tended to be more verbally aggressive than boys; social class was of less predictive value. Language maturity helped to identify verbal aggression but sex apparently was a more accurate predictor.

This study suggests that there is a relationship between language maturity and aggressive behavior. This particular investigation provides support for Montare and Boone's (1973) contention that there is a relationship between language maturity and aggressive behavior, although the relationship is stronger for the physically aggressive rather than for the verbally aggressive children.

The lack of statistical significance for sex and SES as predictors for physical aggression suggests that possible results attributed to these variables in previous research are, in fact, identifying something distinct from these variables such as language maturity. If this is the case, then it would appear that language maturity would be useful in explaining aggressive behavior while sex and social class tend to lose explanatory power for physically aggressive expressions and SES tends to lose its power for verbal aggression.

Recommendations

Conclusions drawn from the data for this study indicate that language maturity and aggressive behavior seem to be related and that this relationship

is stronger for physically aggressive subjects. These particular results seem to indicate two recommendations. Recommendation number one is for future research which attempts to describe and analyze development of language in language immature subjects. Language stimulation of these low language individuals may help to determine the effect of language maturity on physical aggression. By using a pretest/posttest design focusing on aggressive behavior, these low language children may be studied to determine if their physical expression may be managed by developing their language maturity. If, in fact, physically aggressive behavioral expression may be ameliorated by developing language maturity, then classroom management problems relating to physical aggression might be lessened. Recommendation number two, relating to verbally aggressive expression, is to conduct future research with these subjects to indicate true aggressive preference. Although language maturity had an effect on a subject's choice of verbal aggression, it may be that sex is a better predictor. Measurement difficulties led to the problem of verbal aggressive preference identification. Because an avoidance choice was available, these language mature children may have concluded, in many cases, to avoid any aggressive response. This problem associated with social desirability in aggressive preference measurement might be avoided in future research by eliminating the avoidance choice. Future research involving language mature subjects must first identify the aggressive nature of children as either physical or verbal before making any behavior management decisions.

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Table 1

Multiple Correlation Coefficients for Sex, Social Class and Language as Predictors of Physical Aggression

Variable	Multiple R	R^2	R^2 Change	F	Individual Overall F	P
SEX	.102	.010	.010	1.11	1.11	.295
SES	.144	.020	.010	.30	.73	.387
LANG	.491	.241	.220	29.90	8.18	.001

Table 2

Pair-Wise Correlation Matrix for Physical Aggression

Variable	r	r^2
SEX	.10	.01
SES	-.02	.001
LANG	-.45	.20

Table 3

Multiple Correlation Coefficients for Sex, Social Class and Language as Predictors of Verbal Aggression

Variable	Multiple R	R^2	R^2 Change	F	Individual Overall F	P
SEX	.256	.066	.066	7.48	7.48	.007
SES	.265	.070	.004	.49	2.62	.054
LANG	.324	.105	.034	3.95	3.01	.021

Table 4

Pair-Wise Correlation Matrix for Verbal Aggression

Variable	r	r^2
SEX	-.256	.066
SES	-.005	.001
LANG	.16	.026